So that, in the regenerator chamber, neglecting the resistance due to surface friction, the pressure of the air will increase to

5.16-0.85 = 4 mm 31 of water.

The foregoing considerations being kept in mind, the working conditions within the open-hearth furnace may be analyzed.

FIG. 23.

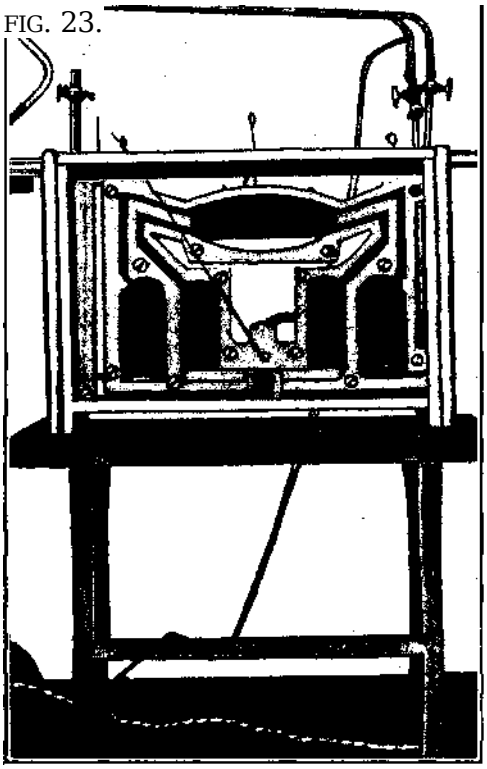

Fig. 23 shows a model reproducing the longitudinal vertical section of an open-hearth furnace. This model is placed between two sheets of glass and immersed in a glass tank filled with water; colored kerosene is circulated through the model. The mechanics of the circulation of the gases within this type of furnace are clearly shown: the regenerators by heating the air and the gas produce a positive hydrostatic pressure. It is this pressure which impresses their velocities upon the gases in motion; it is completely absorbed in overcoming the friction in the uptakes, etc., and in producing the velocity with which the gases enter the heating chamber of the furnace. In the heating chamber, the gases have a very small velocity, and their hydrostatic pressure is, on the average, equal to the pressure of the atmosphere, which must be the case, by reason of the number of working doors and

openings.

The descent of the light gas through the uptakes and regen-